

CLAIM AMENDMENTS

Claim Amendment Summary

Claims pending

- Before this Amendment: Claims 1-20
- After this Amendment: Claims 1-20

Non-Elected, Canceled, or Withdrawn claims: None

Amended claims: 7

New claims: None

Claims:

1. (Previously Presented) A device for protecting a circuit against a polarity reversal of a connection to a D.C. power supply, the device comprising:
a controllable switch interposed on said connection between a first terminal of a first voltage of said D.C. power supply and a first terminal of said circuit; and
first means for turning-off the switch with a turn-off delay in the presence of a reverse polarity; and
second means for turning on the switch with a turn-on delay shorter than the turn-off delay, when the polarity is normal.

2. (Previously Presented) The device of claim 1, wherein said turn-off delay is chosen to be greater than a duration of transient polarity reversals.

3. (Original) The device of claim 1, wherein said first terminal of the circuit to be protected is a ground connection terminal.

4. (Original) The device of claim 1, wherein said first means comprise a microcontroller having an output controlling, directly or via a selective delay element, said switch.

5. (Original) The device of claim 1, wherein said switch is a MOS transistor with an N channel.

6. (Original) The device of claim 5, wherein said first means comprise a first resistor connecting the gate of the transistor to said first terminal of the circuit to be protected.

7. (Currently Amended) ~~The device of claim 6;~~ A device for protecting a circuit against a polarity reversal of a connection to a D.C. power supply, the device comprising:

a controllable switch interposed on said connection between a first terminal of a first voltage of said D.C. power supply and a first terminal of said circuit; and

first means for turning-off the switch with a turn-off delay in the presence of a reverse polarity; and

second means for turning on the switch with a turn-on delay shorter than the turn-off delay, when the polarity is normal;

wherein said switch is a MOS transistor with an N channel;

wherein said first means comprise a first resistor connecting the gate of the transistor to said first terminal of the circuit to be protected; and

wherein a second resistor in series with a diode connects a terminal of the device connected to a second voltage of the D.C. power supply.

8. (Previously Presented) The device of claim 7, wherein a zener diode is connected in parallel with the first resistor.

9. (Previously Presented) A circuit, comprising:
a switch operable to conduct a current to a first node of a power supply when the first node has a predetermined polarity relative to a second node of the power supply;

a first delay element coupled to the switch and operable to disable the switch from conducting current at a first predetermined time after the polarity reverses; and

a second delay element coupled to the switch and operable to enable the switch to conduct current at a second predetermined time after the polarity returns to the predetermined polarity, the second predetermined time being shorter than the first predetermined time.

10. (Previously Presented) The apparatus of claim 9 wherein the first delay element disables the switch in response to a normal condition of the current.

11. (Previously Presented) The apparatus of claim 9, further comprising a third delay element disabling the switch in response to a normal condition of the current.

12. (Previously Presented) The apparatus of claim 9 wherein:
the switch comprises a transistor; and
the first delay element is operable to discharge the gate capacitance of the transistor.

13. (Previously Presented) A method, comprising:
conducting a current between first and second supply nodes when the first node has a predetermined polarity relative to a second node;
disabling the conducting of current at a first predetermined time after the polarity inverts; and
enabling the conducting of current at a second predetermined time after the polarity returns to the predetermined polarity, the second predetermined time being shorter than the first predetermined time.

14. (Original) The method of claim 13 wherein disabling the conducting comprises transmitting a signal.

15. (Original) The method of claim 13 wherein the conducting of current is disabled in response to a normal condition of the current.

16. (Original) The method of claim 13 wherein the first and second supply nodes are coupled to a DC power supply.

17. (Previously Presented) A system, comprising:

a load;

a power supply coupled to the load;

a switch operable to conduct a current to a first node of the power supply when the first node has a predetermined polarity relative to a second node of the power supply;

a first delay element coupled to the switch and operable to disable the switch from conducting current at a first predetermined time after the polarity reverses; and

a second delay element coupled to the switch and operable to enable the switch to conduct current at a second predetermined time after the polarity returns to the predetermined polarity, the second predetermined time being shorter than the first predetermined time.

18. (Previously Presented) A vehicle, comprising:

a system, comprising:

a load;

a power supply coupled to the load;

a switch operable to conduct a current to a first node of the power supply when the first node has a predetermined polarity relative to a second node of the power supply;

a first delay element coupled to the switch and operable to disable the switch from conducting current at a first predetermined time after the polarity reverses; and

a second delay element coupled to the switch and operable to enable the switch to conduct current at a second predetermined time after the polarity returns to the predetermined polarity, the second predetermined time being shorter than the first predetermined time.

19. (Original) The vehicle of claim 18 wherein the power supply is a DC power supply.

20. (Previously Presented) An integrated circuit, comprising:

a switch operable to conduct a current to a first node of a power supply when the first node has a predetermined polarity relative to a second node of the power supply;

a first delay element coupled to the switch and operable to disable the switch from conducting current at a first predetermined time after the polarity reverses; and

a second delay element coupled to the switch and operable to enable the switch to conduct current at a second predetermined time after the polarity returns to the predetermined polarity, the second predetermined time being shorter than the first predetermined time.